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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/638,245

Applicant(s)

HANNA, CHRISTOPHER M.

Examiner

Ping Lee

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 and 49-120 is/are pending in the application.
4a) Of the above claim(s) 7-9, 49-59 and 94-103 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60-93 and 104-120 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 7-9, 49-59 and 94-103 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/8/06.
2. Claims 60-93 and 104-120 are being examined.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 60-68 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the prior art as illustrated in Fig. 1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a signal combiner arrangement" reads on matrix means in claim 1 (claim 43 depends on claim 1) of '842, the claimed "a signal transformation arrangement" reads on the circuitry for providing the encoded difference signal and conditional sum signal as specified in claim 43. Sampling rate in the processor has been explicitly claimed in claim 1 of '842.

Claim 43 of '842 fails to claim ADC. However, it would have been obvious to one of ordinary skill in the art to use well known ADC to convert the analog input signals to digital left channel signal and digital right channel signal so the encoder specified in claim 1 of '842 can process the digital input signals.

Claim 43 of '842 also fails to claim a sum and difference signal generator arrangement. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and the difference signal being preemphasized. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include a generator arrangement to generate a first pre-emphasized digital signal as a function of the sum signal and a second pre-emphasized digital signal as a function of the difference signal in order to comply with BTSC standard.

Claim 43 of '842 also fails to claim a digital-to-analog converter arrangement. Again, in view of the prior art as shown in Fig. 1, the BTSC standard requires the sum and difference signal to be combined to form a composite signal and the composite signal is generated in analog form to a remote receiver through broadcast. So the encoded digital difference and the encoded sum specified in claim 43 of '843 cannot be sent as the broadcasting signal in digital form. One skilled in the art would have reached a reasonable conclusion that digital-to-analog conversion is needed before the composite signal is broadcasted based on BTSC standard. Converting the encoded digital sum and the encoded digital difference first before combining them forming the composite signal is just one way to meet the BTSC standard. One skilled in the art would have also recognized the possibility of forming the digital composite signal and then converting it to analog format. It is noted that claim 43 of '842 specifies a composite modulator means. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 by incorporating a digital-to-analog converter arrangement together with a composite signal generator arrangement in order to generate analog BTSC composite signal for broadcasting.

5. Claims 69-77 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the prior art as illustrated in Fig. 1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a signal combiner arrangement" reads on matrix means in claim 1 (claim 43 depends on claim 1) of '842, the claimed "a signal

transformation arrangement" reads on the circuitry for supplying the encoded difference signal and the conditioned sum signal as specified in claim 43 of '842. Sampling rate in the processor has been explicitly claimed in claim 1 of '842. The claimed "a composite signal generator arrangement" reads on composite modulator means because it is specified being within the digital BTSC signal encoder.

Claim 43 of '842 fails to claim ADC. However, it would have been obvious to one of ordinary skill in the art to use well known ADC to convert the analog input signals to digital left channel signal and digital right channel signal so the encoder specified in claim 1 of '842 can process the digital input signals.

Claim 43 of '842 also fails to claim a sum and difference signal generator arrangement. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and the difference signal being preemphasized. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include a generator arrangement to generate a first pre-emphasized digital signal as a function of the sum signal and a second pre-emphasized digital signal as a function of the difference signal in order to comply with BTSC standard.

Claim 43 of '842 also fails to claim a digital-to-analog converter arrangement to convert the digital composite signal. Again, in view of the prior art as shown in Fig. 1, the BTSC standard requires the sum and difference signal to be combined to form a composite signal and the composite signal is generated in analog format to a remote receiver through broadcast. So a composite signal cannot be sent as the broadcasting

signal in digital form. One skilled in the art would have reached a reasonable conclusion that digital-to-analog conversion is needed before the digital composite signal is broadcasted based on BTSC standard. Examiner takes Official Notice that this feature is notoriously well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 by incorporating a well known digital-to-analog converter arrangement in order to generate analog BTSC composite signal for broadcasting.

6. Claims 78 and 79 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the prior art as illustrated in Fig. 1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a signal generator arrangement" reads on matrix means in claim 1 (claim 43 depends on claim 1) of '842, the claimed "a summation signal processing arrangement" reads on the circuitry for generating the conditioned sum signal, the claimed "a difference signal processing arrangement including a signal compressor arrangement" reads on the circuitry for generating the encoded difference signal.

Claim 43 of '842 fails to claim a difference signal processing arrangement including a pre-emphasis filter arrangement. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and the difference signal being preemphasized. Therefore, it would have been obvious

to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include a pre-emphasis filter arrangement in order to comply with BTSC standard.

Claim 43 of '842 also fails to claim a digital-to-analog converter arrangement and a signal combiner arrangement. Again, in view of the prior art as shown in Fig. 1, the BTSC standard requires the sum and difference signal to be combined to form a composite signal and the composite signal is generated in analog form to a remote receiver through broadcast. So the encoded digital difference and the encoded sum specified in claim 43 of '843 cannot be sent as the broadcasting signal in digital form. One skilled in the art would have reached a reasonable conclusion that digital-to-analog conversion is needed before the composite signal is broadcasted based on BTSC standard. Converting the encoded digital sum and the encoded digital difference first before combining them forming the analog composite signal is just one way to meet the BTSC standard. One skilled in the art would have also recognized the possibility of forming the digital composite signal and then converting it to analog format. It is noted that claim 43 of '842 specifies a composite modulator means. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 by incorporating a digital-to-analog converter arrangement together with a composite signal generator arrangement in order to generate analog BTSC composite signal for broadcasting.

7. Claims 80-81 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the prior art as illustrated in Fig. 1.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a signal generator arrangement" reads on matrix means in claim 1 (claim 43 depends on claim 1) of '842, the claimed "a summation signal processing arrangement" reads on the circuitry for generating the conditional sum signal and "a difference signal processing arrangement including a signal compressor arrangement" reads on the difference channel processing means including a compressor means in claim 8 of '842 (claim 43 depends on claim 8). The claimed "a signal combiner arrangement" reads composite modulator means. It is noted that the composite modulator means is a part of the digital BTSC signal encoder.

Claim 43 of '842 fails to claim a difference signal generator arrangement including a pre-emphasis filter arrangement. In view of the prior art as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and the difference signal being preemphasized. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include a pre-emphasis filter arrangement as a function of the difference signal in order to comply with BTSC standard.

Claim 43 of '842 also fails to claim a digital-to-analog converter arrangement to convert the digital composite signal. Again, in view of the prior art as shown in Fig. 1, the BTSC standard requires the sum and difference signal to be combined to form a composite signal and the composite signal is generated in analog format to a remote receiver through broadcast. So the encoded digital difference and the encoded sum specified in claim 43 of '843 cannot be sent as the broadcasting signal in digital form.

One skilled in the art would have reached a reasonable conclusion that digital-to-analog conversion is needed before the composite signal is broadcasted based on BTSC standard. One skilled in the art would have recognized the possibility of forming the digital composite signal and then converting it to analog format. Converting the digital composite signal to analog signal is just one way to meet the BTSC standard.

Examiner takes Official Notice that digital-to-analog converter is notoriously well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 by incorporating a digital-to-analog converter arrangement together with a composite signal generator arrangement in order to generate analog BTSC composite signal for broadcasting.

8. Claims 82-86 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 10 of U.S. Patent No. 5,796,842. Although the conflicting claims are not identical, they are not patentably distinct from each other because the preamble in claim 1 (claim 10 depends on claim 1) of '842 states that the digital left and digital right channel audio signals are provided to the digital BTSC signal encoder. The claimed step of combining reads on the function provided by the matrix means in claim 1 of '842. The claimed step of encoding reads on the function provided by the digital BTSC signal encoder as specified in the preamble in claim 1 of '842. The claimed "adaptive signal weighting system" reads on the function provided by spectral compression means specified in claim 10 of '842.

Claim 43 of '842 fails to claim ADC. However, it would have been obvious to one of ordinary skill in the art to use well known ADC to convert the analog input signals to

digital left channel signal and digital right channel signal so the encoder specified in claim 1 of '842 can process the digital input signals.

Claim 43 of '842 also fails to claim 75 μ s preemphasis for the digital sum channel. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and the difference signal being preemphasized. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include a generator arrangement to generate a first pre-emphasized digital signal as a function of the sum signal and a second pre-emphasized digital signal as a function of the difference signal in order to comply with BTSC standard.

9. Claims 87, 88 and 115 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 43 specifies that the digital BTSC signal encoder further including composite modulator means. So, the composite modulator means is a digital composite modulator.

Claim 43 also specified that the composite modulator means for receiving encoded difference signal and the conditioned sum signal. In view of BTSC standard, the circuitry for generating these two signals reads on the claimed a digital BTSC encoder.

10. Claims 89-91 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 5 of U.S. Patent No. 5,796,842 in

view the prior art as illustrated in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the preamble in claim 1 (claim 5 depends on claim 1) of '842 states a digital BTSC signal encoder. The claimed "a digital matrix unit" reads on the matrix means in claim 1 of '842. The claimed "a sum channel processing unit" reads on the sum signal processing means and the claimed "a difference channel processing means" reads the difference channel processing means. The claimed "a single integrate circuit" is cited in claim 5.

Claim 5 of '842 fails to claim a conditioned digital sum channel signal. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and further processed. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 5 of '842 in view of Fig. 1 to condition the sum signal in order to comply with BTSC standard.

11. Claims 92 and 93 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view the prior art as illustrated in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the preamble in claim 1 (claim 5 depends on claim 1) of '842 states a digital BTSC signal encoder. The claimed "a matrix unit" reads on the matrix means in claim 1 of '842. The claimed "a digital sum channel processing unit" reads on sum channel processing means and the claimed "a digital difference channel processing means" reads on the difference channel processing means. The claimed "a digital modulator unit" reads on composite

modulator means because claim 43 specifies that a digital BTSC signal encoder further includes composite modulator means.

Claim 43 of '842 fails to claim a conditioned digital sum channel signal. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and further processed. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to condition the sum signal in order to comply with BTSC standard.

Regarding claim 93, although the carrier frequency is not explicitly stated in claim 43 of '842, in view of BTSC standard, it would have been obvious to one of ordinary skill in the art to digitally modulate the encoded digital different signal at a frequency substantially equal to 31 kHz.

12. Claims 104-108 and 116-118 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view the prior art as illustrated in Figs. 1 and 2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the preamble in claim 1 (claim 43 depends on claim 1) of '842 states a digital BTSC signal encoder. The claimed "an input section" reads on the matrix means in claim 1 of '842. The claimed "a digital difference channel section" reads on the difference channel processing means specified in claim 10 (claim 43 depends on claim 10). The claimed "a digital sum channel section" reads on sum channel processing means. The claimed "an output section" reads on composite modulator means for generating a composite modulated signal.

Claim 43 of '842 fails to claim altering the amplitude and phase of the digital sum signal. In view of the prior art as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and further processed. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to condition the sum signal in order to comply with BTSC standard.

Claim 43 of '842 also fails to claim the digital difference channel section comprising a frequency shifting system. In view of the prior art as shown in Fig. 2 and according to BTSC standard, the difference signal has to be modulated (reads on frequency shifting or multiplier system) at a carrier frequency at around 31 kHz. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of the prior art as shown in Fig. 2 by frequency shifting the difference signal in order to comply with BTSC standard.

13. Claims 109 and 119 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a digital signal processor" reads on a digital BTSC signal encoder specified in the preamble of claim 1 (claim 5 depends on claim 1). The claimed "an input section" reads on the matrix means in claim 1 of '842. The claimed "a sum channel processing section" reads on sum channel processing means and the claimed "a difference channel processing section" reads on the difference channel

processing means. The claimed "a combining section" reads on composite modulator means.

Claim 5 of '842 fails to claim a conditioned digital sum channel signal. In view of the prior as shown in Fig. 1, according to BTSC standard, it is required to have the sum signal being preemphasized and further processed. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 5 of '842 in view of Fig. 1 to condition the sum signal in order to comply with BTSC standard.

14. Claims 110 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the prior art as illustrated in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the preamble in claim 1 (claim 5 depends on claim 1) of '842 states a digital BTSC signal encoder. The claimed "filtering a digital signal including difference-channel information" reads on the difference channel processing as specified in claim 24 of '842 (claim 43 depends on claim 24). The claimed "combining" reads on the function provided by composite modulator means.

Claim 43 of '842 fails to claim "filtering a digital signal including sum-channel information". In view of the prior as shown in Fig. 1 and according to BTSC standard, it is required to have the sum signal being preemphasized and filtered. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to filter the sum signal in order to comply with BTSC standard.

15. Claims 111 and 120 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,118,879.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of patent '879 is a more specific claim that includes all limitation of claim 111 of current application.

16. Claims 111 and 120 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 21 of U.S. Patent No. 5,796,842 in view of the admitted prior art as shown in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "a first digital filter section" reads on the compression means for measuring a first energy level in a first select spectral portion as specified in claim 9 (claim 21 depends on claim 9). The claimed "a second digital filter section" reads on with wideband compression means including means for measuring a second energy level in a second select spectral portion as specified in claim 19 of '842 (claim 21 depends on claim 19).

Claim 21 of '842 fails to claim "a second select spectral region including at least a part of the first select spectral region". In view of the prior as shown in Fig. 1 and according to BTSC standard, it is required to have such band regions for the first filter and the second filter. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 21 of '842 in view of Fig. 1 to set the band limits on the filters in order to comply with BTSC standard.

The preamble of claim 1 of patent '842 specifies a digital BTSC signal encoder. Therefore, it meets the limitation in claim 120.

17. Claims 112 and 113 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in

view of the admitted prior art as shown in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "signal combiner arrangement" reads on matrix means in claim 1 (claim 43 depends on claim 1). The claimed "a signal transformation arrangement" reads on the different channel processing means as specified in claim 7 (claim 43 depends on claim 7) and sum channel processing means as specified in claim 25 of patent '842 (claim 43 depends on claim 25). The claimed "a composite signal generator arrangement" reads on the composite modulator means in claim 43 of patent '842. It is noted that claim 43 specifies that the digital BTSC signal encoder further including composite modulator means. So, one skilled in the art would have expected that the composite signal is a digital one.

Claim 43 of patent '842 fails to claim a sum and difference signal generator arrangement. In view of the prior as shown in Fig. 1 and according to BTSC standard, it is required to have separate pre-emphasizers for the sum and the difference signals. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include an arrangement to provide pre-emphasize for the sum and difference signals in order to comply with BTSC standard.

18. Claim 114 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 43 of U.S. Patent No. 5,796,842 in view of the admitted prior art as shown in Fig. 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed "circuitry that generates a summation signal and a difference signal" reads on matrix means in

claim 1 (claim 43 depends on claim 1). The claimed "transforming circuitry" reads on circuitry that supplies encoded difference signal and conditioned sum signal to the composite modulator means in claim 43 of patent '842. It is noted that claim 43 specifies that the digital BTSC signal encoder further including composite modulator means. So, one skilled in the art would have expected that the composite modulator means receive digital encoded difference signal and digital conditioned sum signal.

Claim 43 of patent '842 fails to claim "a signal arrangement". In view of the prior art as shown in Fig. 1 and according to BTSC standard, it is required to have separate pre-emphasizers for the sum and the difference signals. Therefore, it would have been obvious to one of ordinary skill in the art to modify claim 43 of '842 in view of Fig. 1 to include an arrangement to provide pre-emphasize for the sum and difference signals in order to comply with BTSC standard.

Response to Amendment

19. The declaration, filed by Dr. John Strawn, under 37 CFR 1.132 filed 4/15/09 is insufficient to overcome the rejection under 35 U.S.C. 103 of claims 60-77, 83, 84, 86-89, 91, 110, 112-115 and 119 based upon applicant admitted prior art as illustrated in Fig. 1 in view of Holt and the rejection under 35 U.S.C. 103 of claims 78-81, 104-108, 111, 116-118 and 120 based upon applicant admitted prior art as illustrated in Fig. 1 in view of Holt and Walker as set forth in the last Office action because: It refer(s) only to the system described in the above referenced application and not to the individual

claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

The declaration compares the specific detail in Holt with the specific element in BTSC encoder; whereas, the rejection is based on the general teaching from Holt that the digital circuitry would allow the designer greater flexibility to align the multiple signal paths. In other words, the declaration compares the disclosed digital BTSC encoder in the specification instead of the claimed invention in the claims.

For example, under #16, the declaration addresses the difference between BTSC sum signal and Holt's multiplexor. However, none of the claims specifies how the sum signal in the present claimed invention reduces the interference. The rejection is not based on substitution of the multiplexor taught in Holt for the summer in the prior art as illustrated in Fig. 1. The rejection indicates that one skill in the art would have been motivated to design digital circuitry to replace the equivalent analog circuitry, so the designer has greater ability to equalize the delays between multiple paths.

Under #17- #19, the pilot tone and the sample frequency are discussed. Again, none of the claims specifies the relationship between pilot tone and the sample frequency.

Under #20- #30, the declaration states that the disclosed BTSC encoder involves complex filtering that is not taught in Holt. Again, none of the claims specifies the detail of the filtering other than what has been illustrated in the prior art as shown in Fig. 1. That is, the prior art shown in Fig. 1 has each and every claimed elements with the

exception that Fig. 1 is an analog device, whereas, the present invention claims a digital equivalent.

Under #31- #43, the declaration states that the disclosed BTSC encoder involves a spectral roll off that is not taught in Walker. Again, none of the claims specifies the detail of the filtering other than what has been illustrated in the prior art as shown in Fig. 1. That is, the prior art shown in Fig. 1 has each and every claimed elements with the exception that Fig. 1 is an analog device, whereas, the present invention claims a digital equivalent.

Although each and every claim involves the BTSC standard, and the specification discloses the complexity of designing and implementing a digital BTSC standard, the claimed invention fails to explicitly claim any specific technique, complex filtering equations and/or trade-off being used for implementing such digital BTSC encoder.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

20. The declaration, filed by Mr. Tyler, under 37 CFR 1.132 filed 5/22/09 is insufficient to overcome the rejection under 35 U.S.C. 103 of claims 60-77, 83, 84, 86-89, 91, 110, 112-115 and 119 based upon applicant admitted prior art as illustrated in Fig. 1 in view of Holt and the rejection under 35 U.S.C. 103 of claims 78-81, 104-108, 111, 116-118 and 120 based upon applicant admitted prior art as illustrated in Fig. 1 in view of Holt and Walker as set forth in the last Office action because: the declarant's

vested interest in the application; the lack of objective evidence of commercial success; and showing is not commensurate in scope with the claims.

a. Under #6, "products" have been stated. It is unclear what "products" are and how these "product" relates to the claimed subject matter and the rejection(s).

b. There is no factual evidence to show that the "products" incorporate the claimed subject matter, and based on which specific claim(s).

c. Under #6, "a higher-performance version of a previously analog—only solution" has been stated. It is unclear what "a higher-performance version of a previously analog—only solution" is and how this ""a higher-performance version of a previously analog—only solution" relates to the claimed subject matter and the rejection(s).

d. The declaration fails to show what considered as "a higher performance version of the previously analog-only solution", what is being specifically requested by the customer and how does it relates to the claimed invention and the rejection.

e. Under #6, it states "the impetus for developing the digital technology came from THAT's customers, who has been frustrated over the drift and limited performance of the analog solutions". What does this statement mean? How would this statement relate to the rejection and the claimed subject matter? Why this information should be considered as a long-felt need?

f. Under # 7, "the prototype" has been stated as "was based largely upon the digital implementation described in the present application, and based on information

and belief including the features covered by pending claims 60-93 and 104-120". The rejection is based on the claimed invention alone, not the combination of the invention described in the present application and features covered by the pending claims. What are "the features"?

g. Under #8, it states that "many tens of thousands of broadcast-quality BTCS encoders" have been manufactured and sold, "at least five different customers purchasing the products on regular basis", "the company's customers have sold many more tens of thousands of units incorporating the Technology". How do these statements relate to the rejection and the claimed subject matter? Why this information should be considered as commercial success?

h. Under #9, it states that "since 1994, THAT Corporation has been involved in licensing BTSC Technology", "more than 10 major licensees who use the Technology to implement millions of BTSC products each year", many companies have been identified, and "the company's licensees are responsible for literally millions of BTSC implementations per month". How does this information relate to the rejection and the claimed subject matter? why this information should be consider as commercial success?

i. Under #10, "the technology" is stated. It is unclear what "the technology" is and how this "the technology" relates to the claimed subject matter and the rejection(s).

j. Under #10, it states "THAT has applied for approximately 20 United States and 76 foreign patent applications related to TV audio technology in the past ten years".

What does this statement mean? How does it relate to the claimed subject matter and the rejection?

k. Under #10, it states "a complete suite of Verilog code". There is no evidence that this code relates to the claimed subject matter.

l. Under #10, it states "prominent IC makers license for many tens, often hundreds of thousands of dollars in start-up fees, plus a promise to pay royalties for each instance of our Technology which they manufacture and sell". Why this statement should be considered as commercial success?

m. Under #10, it states "I believe IC companies would not need the Verilog code to implement the claimed digital BTSC technology". What does this statement mean? No claim has specified Verilog code.

n. It states that the claimed subject matter solved a problem that was long standing in the art. However, there is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the problem knew of the teachings of the above cited references, they would still be unable to solve the problem. See MPEP § 716.04.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Claim Rejections - 35 USC § 103

21. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
22. Claims 60-77, 83-84, 86-89, 91,109, 110, 112-115 and 119 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art as illustrated in Fig. 1 in view of Holt et al (hereafter Holt) (US 4,803,727).

Regarding claim 87, the prior art as shown in Fig. 1 illustrated a stereophonic encoder to transmit left and right stereophonic signals by separately processing a sum signal in a L+R path and a difference signal in a L-R path. Although not explicitly shown in Fig. 1, one skilled in the art would have expected that the encoded sum signal and the difference signal could be reconstructed at the decoder at the receiving end to yield a left signal and a right signal, or a monophonic signal. The prior art as illustrated in Fig. 1 was implemented using analog circuitry in accordance with the standard defined by BTSC. However, Fig. 1 fails to show how to implement the encoder by using digital circuitry.

Holt teaches a similar encoder also including a L+R path and a L-R path to transmit L and R stereophonic signal to a receiver having a decoder (to reconstruct) to obtain left and right signals (applied to the left and right speakers). Furthermore, Holt teaches that any difference in phase during transmitting between these two paths will result in loss of stereophonic information (col. 1, lines 33-35). To prevent a mismatch, Holt proposes inserting delay equalization in the paths and to use digital processing for effecting overall processing and delay to avoid the difficulties of matching delays using

analog processors. Holt teaches that it is easy to design digital filters providing the precise delay control without corrupting the signals (col. 3, lines 28-41). Accordingly, one of ordinary skill in the art at the time of the invention was made, with prior art as shown in Fig. 1 and Holt before him/her, would have been motivated to ensure that the signals in L+R and L-R paths are matched, so the stereo relationship between the left and right signals are maintained at the receiver end. Moreover, one of ordinary skill in the art at the time of the invention was made, with prior art as shown in Fig. 1 and Holt before him/her, would have been motivated to embody the analog filters in applicant admitted prior as shown in Fig. 1 using digital technology, which allows a designer greater ability to equalize the delays between multiple paths.

Regarding claims 60-72, 76-77, 82-84, 86, 88, 89, 91, 109, 112-114, 119, Holt teaches that the left and right signals forming the sum and difference first, and then convert to digital signals (by 11, 12). So the digital sum and digital difference signals are encoded for transmission of the stereophonic source signal. With a digital stereophonic input source, the input could be directly applied to the digital matrix without any A/D converters. With analog stereophonic input source, one skilled in the art could utilize any well-known ADC to convert the analog signals (analog L and R) to digital signals (digital L and R) to be applied to the digital matrix to obtain the digital sum signal and the digital difference signal. So the signals (sum and difference signals), used for encoding the stereophonic sound source, after the digital matrix are the same as Holt. Thus, it would have been obvious to one of ordinary skill in the art to modify prior art as illustrated in Fig. 1 and Holt by converting the analog source signals (L and R) to digital

formats, so that the matrix could be implemented by digital circuitry. The claimed 75 μ s preemphasis is inherently included according to BTSC standard. The claimed "digital signal processor" could be interpreted as a circuit for processing digital signal.

Regarding claims 73, 92, 93 and 115, the prior art as shown in Fig. 1 fails to show a digital modulator unit. Examiner takes Official Notice that a digital modulator is notoriously well known in the art. Of course, in accordance with BTSC, the carrier frequency for the difference signal has to be set at 31 kHz. Thus, one of ordinary skill in the art would be motivated to using a well known digital modulator for modulating the digital sum and digital difference signal in order to combine these signals into a single transmitting signal.

Regarding claims 62, 66, 71 and 75, the claimed "preselected sample rate" is inherently included in a digital signal.

23. Claims 78-81,85, 104, 105-108, 111, 116-118 and 120 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art as shown in Fig. 1 in view of Holt as applied to claim 82 above, and further in view of Walker et al. (hereafter Walker) (US 4,809,274).

Regarding claims 78, 80, 85, 104, 105-108, 111, 116-118 and 120 as indicated above, the prior art as shown in Fig. 1 uses analog device for encoding the sum and difference signals, so the compression is also performed by analog device. Both the prior art as shown in Fig. 1 and Holt fail to show an adaptive weighting system. Walker teaches a digital compander transmitting digital audio signal (col. 1, line 17). Walker

suggests an adaptive weighting system to correct errors included by the compression and expansion processes (col. 1, lines 56-58). Accordingly, one of ordinary skill in the art at the time of the invention was made, with all three references before him/her, would have been motivated to use an adaptive weighting system for performing the compression as required by BTSC in order to transmit the stereophonic source to the receiver without incurring error.

Since the stereophonic source is intended to be broadcast as a TV signal in accordance with BTSC, the digital output signal from L-R path and the digital output signal from L+R path could be converted to analog format, so they would be modulated by the carrier in accordance with BTSC; or the digital output signal from L-R path and the digital output signal from L+R path could be modulated by the carrier and then converted to analog signal to be transmitted as a TV broadcast signal. One skilled in the art would be motivated to design the encoder using either method since they produce similar TV broadcast signal.

Regarding claims 79, 81, the claimed 75 μ s preemphasis is inherently included according to BTSC standard.

Response to Arguments

24. Applicant's arguments filed 1/12/09 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections

are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

For example, on p. 28, applicant argued that Holt uses a bandlimiting filters to reduce the bandwidth of the signal. However, the office action indicated that given general teaching by Holt, one of ordinary skill in the art would have been motivated to modify the analog BTSC encoder by designing a digital encoder for encoding the analog stereophonic signals.

The admitted prior art is an analog BTSC encoder that generates a composite modulated BTSC signal. Every claimed feature is shown or inherently included in the analog BTSC encoder as shown in Fig. 1 with the exception that the analog function as shown in Fig. 1 is being replaced with a functionally equivalent digital replacement. Holt teaches that an analog encoder can be replaced with a functionally equivalent digital encoder to provide better stereophonic image (col. 1, lines 21-58). The analog BTSC system also relies on L+R and L-R to form the stereophonic image. When there is a delay between the sum and difference signal, the quality of the stereophonic signal would suffer. Therefore, one skilled in the art would have been motivated to modify the prior art analog BTSC encoder in view of Holt.

Applicant further argued that the current invention converts the BTSC compliant ones (in digital form) to analog, where as Holt fails to do so. Applicant fails to realize that the rejection is based on the prior art analog BTSC encoder in view of Holt, not Holt alone. In order to satisfy BTSC standard, the transmission signal (the signal to be

transmitted to remote location after the encoder) is in analog form. The goal of modifying the prior art analog BTSC encoder as shown in Fig. 1 is not intended to transmit the digital transmission signal. The purpose of modifying the prior art analog BTSC encoder as shown in Fig. 1 in view of Holt is to have a digital encoder which would provide better stereophonic image as the receiving end. However, one simply cannot ignore requirement set by BTSC. Therefore, a DAC is required to couple to the output of the digital BTSC encoder to have an analog transmission signal.

On p. 31, applicant argued that Walker fails to show or suggest of an adaptive weighting signal weighting system. It appears that applicant thought that Walker fails to use the words "adaptive weighting". As shown in Fig. 1, the gain adjustment is performed based on the peak level (one example) continuously. Therefore, Walker suggests an adaptive weighting system.

On the following pages, applicant went in the great detail to compare Walker reference alone with the present invention, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522. The examiner can normally be reached on Wednesday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ping Lee/
Primary Examiner, Art Unit 2614

pwl